

TRADER SERVICE SHEET

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**C**OVERING a short-wave range of 17-50 metres, the Alba 870 (A.C.) receiver is a 4-valve (plus rectifier) A.C. 3-band superhet suitable for mains of 190-250 V, 40-100 C/S.

A similar chassis is fitted in the 970 (A.C.) radio-gramophone and automatic radio-gramophone but as standard they are for mains of 50-60 C/S only. Special models, however, are made for 40-100 C/S.

There are also A.C./D.C. versions of these three models, bearing the same type numbers.

This Service Sheet was prepared on an A.C. table model.

#### CIRCUIT DESCRIPTION

Aerial input on M.W. and L.W. via coupling coils L<sub>1</sub>, L<sub>2</sub> to inductively coupled band-pass filter. Primary L<sub>3</sub>, L<sub>4</sub> tuned by C<sub>21</sub>; secondary L<sub>9</sub>, L<sub>10</sub> tuned by C<sub>24</sub>; coupling coils L<sub>5</sub>, L<sub>6</sub>, L<sub>7</sub>, L<sub>8</sub>. On S.W. band aerial input is via coupling coil L<sub>11</sub> to single tuned circuit L<sub>12</sub>, C<sub>24</sub>.

First valve (V<sub>1</sub>, **Mullard metallised TH4**) is a triode-hexode operating as frequency changer with internal coupling. Triode oscillator grid coils L<sub>13</sub> (S.W.), L<sub>15</sub> (M.W.), L<sub>17</sub> (L.W.) are tuned by C<sub>25</sub>; parallel trimming by C<sub>26</sub> (S.W.), C<sub>27</sub> (M.W.), C<sub>28</sub> (L.W.); series tracking by C<sub>5</sub> (M.W.) and C<sub>29</sub> (L.W.); oscillator anode reaction coils L<sub>14</sub> (S.W.), L<sub>16</sub> (M.W.), L<sub>18</sub> (L.W.).

Single variable-mu R.F. pentode intermediate frequency amplifier (V<sub>2</sub>, **Mullard metallised VP4B**) operates with tuned-primary tuned-secondary transformer

R<sub>11</sub> and manual volume control R<sub>14</sub> to C.G. of pentode output valve (V<sub>4</sub>, **Mullard Pen4A**). Fixed tone correction in anode circuit by C<sub>15</sub>. Provision for connection of external high-impedance speaker across primary of T<sub>1</sub>.

Second diode of V<sub>3</sub>, fed via C<sub>11</sub>, provides D.C. potential which is developed across R<sub>12</sub>, R<sub>13</sub> and fed back as G.B. to F.C. and I.F. valves, giving automatic volume control. Delay voltage is obtained from drop along V<sub>4</sub> cathode resistance R<sub>15</sub>.

When the receiver is switched for gramophone operation, the I.F. valve V<sub>2</sub> operates as an A.F. amplifier with R<sub>8</sub> as anode load and C<sub>14</sub> as coupling to the output valve.

H.T. current is supplied by I.H.C. full-wave rectifying valve (V<sub>5</sub>, **Mullard IW4/350**). Smoothing by speaker field coil L<sub>25</sub> and dry electrolytic condensers C<sub>17</sub>, C<sub>18</sub>. Mains aerial coupling by C<sub>19</sub>.

#### COMPONENTS AND VALUES

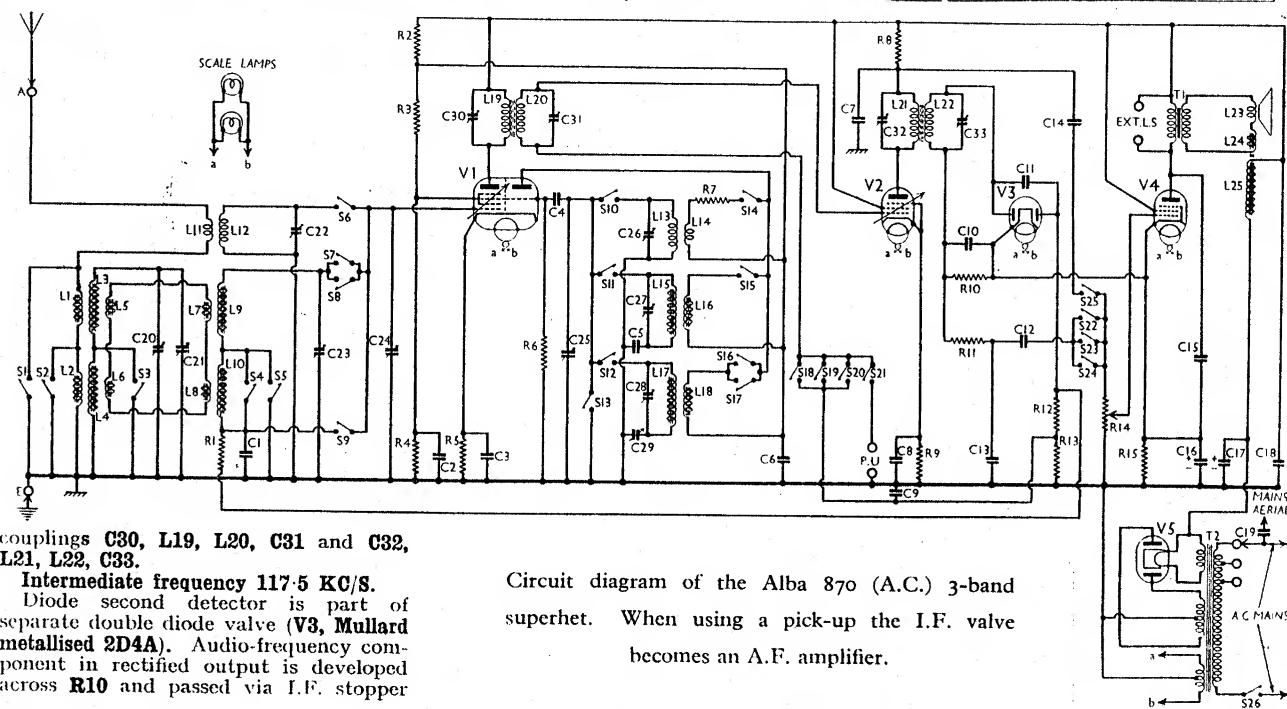
RESISTANCES		Values (ohms)
R <sub>1</sub>	V <sub>1</sub> hexode C.G. decoupling	1,000,000
R <sub>2</sub>	V <sub>1</sub> S.G.'s and osc. anode	13,000
R <sub>3</sub>	H.T. potential divider	10,000
R <sub>4</sub>		25,000
R <sub>5</sub>	V <sub>1</sub> fixed G.B. resistance	200
R <sub>6</sub>	V <sub>1</sub> osc. C.G. resistance	25,000
R <sub>7</sub>	V <sub>1</sub> osc. anode S.W. stabiliser	100
R <sub>8</sub>	V <sub>2</sub> anode decoupling	5,000
R <sub>9</sub>	V <sub>2</sub> fixed G.B. resistance	150
R <sub>10</sub>	V <sub>3</sub> signal diode load	500,000
R <sub>11</sub>	I.F. stopper	50,000
R <sub>12</sub>	V <sub>3</sub> A.V.C. diode load	500,000
R <sub>13</sub>	Manual volume control	500,000
R <sub>14</sub>	V <sub>4</sub> G.B. resistance	150*
R <sub>15</sub>		

\* May be 100 Ω.

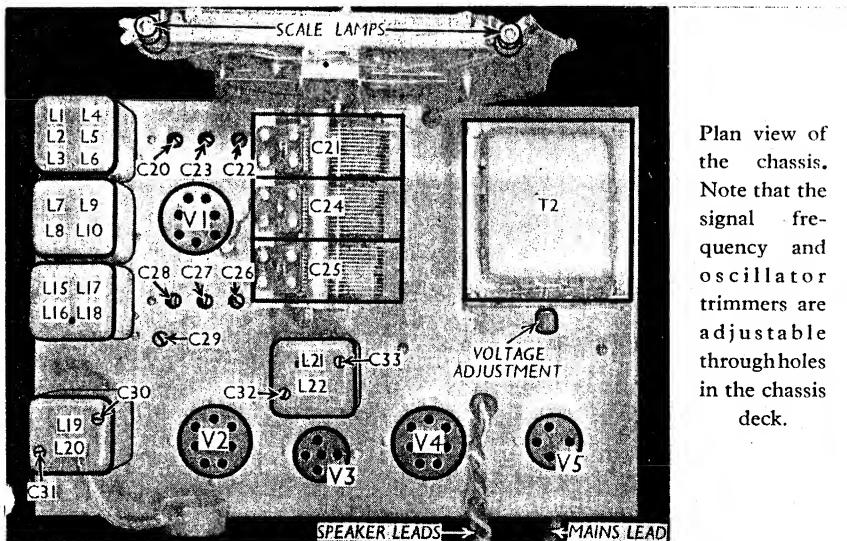
CONDENSERS		Values (μF)
C <sub>1</sub>	V <sub>1</sub> hexode C.G. decoupling	0.1
C <sub>2</sub>	V <sub>1</sub> hexode S.G.'s by-pass	0.1
C <sub>3</sub>	V <sub>1</sub> cathode by-pass	0.1
C <sub>4</sub>	V <sub>1</sub> osc. C.G. condenser	0.0001
C <sub>5</sub>	V <sub>1</sub> osc. M.W. tracker	0.002
C <sub>6</sub>	V <sub>1</sub> osc. anode decoupling	0.1
C <sub>7</sub>	V <sub>2</sub> anode decoupling	0.002
C <sub>8</sub>	V <sub>2</sub> cathode by-pass	0.1
C <sub>9</sub>	V <sub>2</sub> C.G. decoupling	0.1
C <sub>10</sub>	I.F. by-pass	0.00025
C <sub>11</sub>	V <sub>3</sub> A.V.C. diode feed	0.00025
C <sub>12</sub>	Radio A.F. coupling to V <sub>4</sub>	0.005
C <sub>13</sub>	I.F. by-pass	0.00025
C <sub>14</sub>	Gram. A.F. coupling to V <sub>4</sub>	0.005
C <sub>15</sub>	Fixed tone corrector	0.005
C <sub>16</sub> *	V <sub>4</sub> cathode by-pass	25.0
C <sub>17</sub> *	H.T. smoothing	8.0
C <sub>18</sub> *	Mains aerial coupling	12.0
C <sub>19</sub>	Band-pass pri. trimmer	0.0003
C <sub>20</sub>	Band-pass pri. tuning	0.0003
C <sub>21</sub> *	Aerial S.W. trimmer	0.0003
C <sub>22</sub> *	Band-pass sec. trimmimg	0.0003
C <sub>23</sub> *	Band-pass sec. and S.W. tuning	0.0003
C <sub>24</sub> *	Osc. tuning	0.0003
C <sub>25</sub> *	Osc. S.W. trimmer	0.0003
C <sub>26</sub> *	Osc. M.W. trimmer	0.0003
C <sub>27</sub> *	Osc. L.W. trimmer	0.0003
C <sub>28</sub> *	Osc. L.W. tracker	0.0007
C <sub>29</sub> *	1st I.F. trans. pri. tuning	—
C <sub>30</sub> *	1st I.F. trans. sec. tuning	—
C <sub>31</sub> *	2nd I.F. trans. pri. tuning	—
C <sub>32</sub> *	2nd I.F. trans. sec. tuning	—

\* Electrolytic. † Variable. ‡ Pre-set.

OTHER COMPONENTS		Approx. Values (ohms)
L <sub>1</sub>	Aerial, M.W. and L.W.	70.0
L <sub>2</sub>	coupling coils	6.75
L <sub>3</sub>	Band-pass primary coils	1.6
L <sub>4</sub>		1.0
L <sub>5</sub>	Band-pass coupling coils	22.0
L <sub>6</sub>		22.0
L <sub>7</sub>	Band-pass coupling coils	22.0
L <sub>8</sub>		22.0
L <sub>9</sub>	Band-pass secondary coils	1.6
L <sub>10</sub>		15.0



Circuit diagram of the Alba 870 (A.C.) 3-band superhet. When using a pick-up the I.F. valve becomes an A.F. amplifier.



Plan view of the chassis. Note that the signal frequency and oscillator trimmers are adjustable through holes in the chassis deck.

Switch	S.W.	M.W.	L.W.	Gram.
S1	C	O	O	O
S2	O	C	O	C
S3	O	C	O	O
S4	O	C	O	O
S5	O	O	O	C
S6	C	O	O	O
S7	O	C	O	O
S8	O	O	C	O
S9	C	O	O	O
S10	O	C	O	O
S11	O	O	C	O
S12	O	O	O	O
S13	O	O	O	C
S14	C	O	O	O
S15	O	C	O	O
S16	O	O	C	O
S17	O	O	O	C
S18	C	O	O	O
S19	O	C	O	O
S20	O	O	O	C
S21	O	O	O	O
S22	C	O	O	O
S23	O	O	C	O
S24	O	O	C	O
S25	O	O	O	C

the four control settings, starting from the fully anti-clockwise position, O indicating open, and C closed.

**S26** is the Q.M.B. mains switch, ganged with the volume control **R14**.

*Continued overleaf*

Switch diagrams, looking at the underside of the chassis in the directions of the arrows in the illustration below.

Voltages were measured on the 1,200 V scale of an Avometer, chassis being negative.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 TH4*	260	2.1	55	3.1
V2 VP4B	175	1.50	260	5.4
V3 2D4A	—	—	—	—
V4 Pen4A	240	38.0	260	4.8
V5 IW4/350	385†	—	—	—

\* Oscillator anode, 110 V, 5.0 mA.

† Each anode, A.C.

#### GENERAL NOTES

**Switches.**—**S1-S25** are the waveband and gramophone switches, in three ganged rotary units beneath the chassis. The three units are indicated in the under-chassis illustration, the arrows indicating the directions in which they are viewed in the diagrams on the right. The table (col. 3) gives the switch positions for

